

Abstract Submitted
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The Solar Wind: Then and Now JOSEPH HOLLWEG, Univ. of New Hampshire — Early spacecraft data in the 1960s revealed solar wind properties which could not be well-explained by models in which the electron pressure gradient was the principal accelerating force. The Alfvén waves discovered around 1970 were thought for a while to provide additional energy and momentum, but they ultimately failed to explain the rapid acceleration of the fast wind close to the Sun. By the late 1970s, various data were suggesting the importance of the ion-cyclotron resonance far from the Sun. This notion was soon applied to the acceleration region close to the Sun. The models which resulted suggested that the fast wind could be driven mainly by the proton pressure gradient. Since the mid 1990s, SOHO has provided remarkable data which have verified some of the predictions of these theories, and given impetus to studies of the ion cyclotron resonance as the principal mechanism for heating the coronal holes, and ultimately driving the fast wind. After a historical review, we discuss the basic ideas behind current research, emphasizing the particle kinetics. We discuss remaining problems, especially the source of the ion-cyclotron resonant waves and the nature of coronal turbulence.

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